



WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: Nutrient Load Reductions from Land Conservation & Restoration in the Lost Creek Watershed, Clark Fork River Basin

Focus Categories: NPP, NU, M&P

Key Words: watershed conservation & restoration, nutrients, algae

Duration: March, 1999 to February, 2000

Federal Funds Requested: \$ 13,571

Non Federal (Matching): \$27,115

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Congressional District: Montana At Large

Statement of Critical Regional or State Water Problems

The Clark Fork River of western Montana was listed as one of the state's highest priorities for development of a TMDL (total maximum daily load analysis and plan to correct impairment as required under the Clean Water Act). In addition, many of its tributaries are impaired and in need of TMDLs. Citizens of the Clark Fork basin recently adopted a Voluntary Nutrient Reduction Plan (VNRP) to address the impairment of the river mainstem by nutrients and algae. EPA has accepted the VNRP as a substitute for a TMDL. The plan calls for a 20% reduction in nonpoint source nutrient pollution. A project of the Missoula City-County Water Quality District has begun to identify nonpoint source control projects that could reduce nutrient loading to the river. One source is Lost Creek, a tributary that enters the river in its headwaters and is also identified as impaired. Sources of water quality impairment in the Lost Creek drainage include grazing practices and stream alterations. In addition, a new subdivision is developing in the upper reaches of the drainage. The Montana Department of Fish, Wildlife & Parks (DFWP) and the Natural Resource Conservation Service (NRCS) propose to rehabilitate damaged riparian and wetland areas and work with landowners to improve grazing practices. These efforts are expected to have multiple water quality benefits, including reducing nutrient loading. Here we have the opportunity to evaluate the effectiveness of conservation practices in addressing both the mainstem and the tributaries' problems.

Statement of Results and Benefits

This study will contribute to achieving the goals of the Clark Fork mainstem VNRP by estimating nutrient inputs from current land use practices and likely reductions from proposed conservation and restoration efforts in an upper river tributary. In addition, the study will provide a baseline for future impacts from development in the Lost Creek watershed and a data base for development of a TMDL for that impaired stream. Numerous tributaries of the Clark Fork are similarly impaired, and this study should provide a model for developing TMDL's for other subbasins and will help ensure that those TMDL's also contribute to the mainstem river's VNRP. This study should provide a better idea of how such restoration and conservation practices can reduce nutrient loads in any watershed. It will also serve as a Master's thesis project for a student in the Environmental Studies (EVST) program at the University of Montana.

Nature, Scope and Objectives of the Research

This study will focus on Lost Creek, a tributary of the upper Clark Fork River, while keeping in mind the connections between these streams. Restoring the health of the Clark Fork depends on restoring its tributaries. Reducing nutrient pollution from nonpoint sources is one of many aspects of stream restoration that need to be pursued. This study will evaluate the benefits of land restoration and conservation efforts along Lost Creek, both to Lost Creek and to the Clark Fork. The main focus will be nutrients, but other critical water quality parameters will also be assessed.

Lost Creek joins the river near Anaconda, MT, and is impaired for a number of uses by flow alteration, nutrients, habitat alteration, salinity/total dissolved solids/chlorides, and siltation. Practices contributing to problems in the Lost Creek drainage include wintering cattle near the stream, heavy riparian grazing, channelization and flow alteration by irrigation. In addition, a new subdivision is developing in the upper reaches of the drainage. In the summer of 1999, the Montana Department of Fish, Wildlife, and Parks (DFWP) will begin a watershed restoration and management program which will remove a streamside cattle feeding lot and install bank protection structures along 1.2 miles of Lost Creek. In addition, approximately 10 miles of stream will be revegetated and riparian fencing installed. Under the Wetland Reserve Program, the Natural Resources Conservation Service (NRCS) will implement a conservation easement that will reduce grazing on the lower reaches of Lost Creek. These restoration and management activities are primarily intended to improve riparian and fishery habitat in Lost Creek, but the activities are likely to reduce nonpoint nutrient pollution as well.

The objectives of this project are to:

- 1) Assess current stream impacts from cattle grazing and subdivision development ;
- 2) Initiate a water quality data base suitable for TDML development & that provides a baseline for evaluating effects of improved management and increased development;
- 3) Estimate potential benefits of restoration efforts to Lost Creek & the Clark Fork, particularly with respect to nutrient loading.